

# A Multi-Layer Intelligent Loss-of-Control Prevention System (LPS) for Flight Control Applications, Phase I

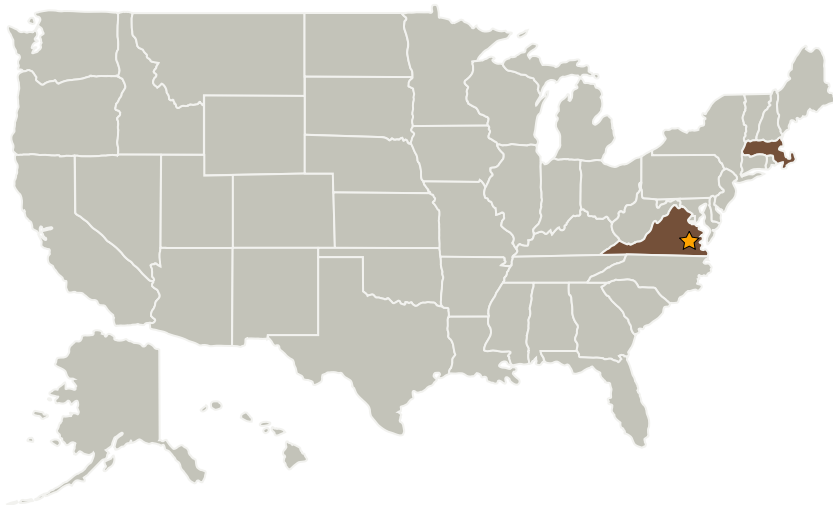
Completed Technology Project (2004 - 2004)



## Project Introduction

The main objective of the proposed work is to design and develop a multi-layer intelligent Loss-of-control Prevention System (LPS) for flight control applications. The proposed LPS consists of several interconnected modules: (i) FDIR module that detects and identifies the failure; (ii) Achievable Dynamic Performance (ADP) calculation module that calculates the maximum performance that can be achieved with the control authority available after failure; (iii) System's Variables Prediction (SVP) module that calculates the relevant variables of the system over a prediction horizon to predict if the system will enter an Unsafe Mode Set (UMS); and (iv) Command Limiting System (CLS) that recalculates the new command constraints and corresponding commands that prevent entering the UMS. In Phase I the emphasis will be on the loss-of-control due to the hard-over failures of the critical flight control effectors. We plan to demonstrate through computer simulations that the proposed LPS will effectively prevent the loss of control and assure the avoidance of unsafe modes of operation. Boeing Phantom Works (Mr. James Urnes, Sr.) will provide technical and commercialization support throughout the project.

## Primary U.S. Work Locations and Key Partners



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## Organizational Responsibility

### Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

### Lead Center / Facility:

Langley Research Center (LaRC)

### Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Langley Research Center(LaRC)	Lead Organization	NASA Center	Hampton, Virginia
Scientific Systems Company, Inc.	Supporting Organization	Industry Small Disadvantaged Business (SDB)	Woburn, Massachusetts

## Primary U.S. Work Locations

Massachusetts	Virginia
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## Project Management

**Program Director:**

Jason L Kessler

**Program Manager:**

Carlos Torrez

**Principal Investigator:**

Jovan Boskovic

## Technology Areas

**Primary:**

- TX16 Air Traffic Management and Range Tracking Systems
  - └ TX16.4 Architectures and Infrastructure